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ABSTRACT

The application of information and communication technologies to education can extend small schools by linking them to many other institutions and making them, in effect, large schools. It is becoming increasingly difficult to define a school's size in terms of the number of students who attend it in person. The definition of whether a school is large or small will become the extent to which it is networked with other places of teaching and learning. This new type of large school will have open administrative and academic structures that enable it to provide and receive educational material from other places, while a small school will have an administrative and academic structure that is largely closed to educational institutions beyond its own gates. As learning becomes more networked and institutions teach to and from one another, small, flexible, open learning centers will become more appropriate than large schools with high internal administration needs and large bureaucracies. The small rural school could become the model for the future organization of learning centers. The close alignment of school management with classroom management that is typical of small schools and the teaching methods employed in one-teacher schools where a teacher encounters multiple learning needs are more conducive to the flexible learning environments of virtual classrooms. A reassessment of the organizational and pedagogical skills of successful teachers in small schools may provide insights into an educational future based on networked learning centers. (TD)

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A New Model for Teaching in Rural Communities -

The Electronic Organisation of Classes As Intranets

By Ken Stevens

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A New Model for Teaching in Rural Communities - The Electronic Organisation of Classes by Intranets

Small rural schools currently face three challenges. The first challenge is to prove that they are as educationally viable as large urban schools. The second challenge is to prove that they can provide access to post-secondary school educational and vocational opportunities to the extent expected of larger, usually urban, schools. The third challenge facing small rural schools is to prove that their continued existence can be justified. These challenges raise educational, social and policy issues that are difficult to ignore.

Some of the changes that are presently taking place in small rural schools suggest that location and size are of little significance. Increasingly, teachers and administrators in these schools are influenced by developments in information and communication technologies.

Large and Small Schools

The application of information and communication technologies to education can provide ways of extending small schools by linking them to many other institutions and, in effect, making them large schools. It is becoming increasingly difficult to argue that a school is large or small in terms of the number of students who attend it in person. A school may appear small in terms of the number of buildings that it has and the number of students who attend in person. However, in educational terms, the same school may be large in terms of the scope of its curriculum and the number of students in other places that it teaches electronically by linking teachers, computers and telephones. Many schools that appear large physically, particularly in terms of the number of students who attend each day in person, may, in fact, be smaller institutions than their counterparts in rural areas which have far fewer students in physical attendance, but which are extensively linked exchange resources with other schools.

The test of whether a school is large or small will inevitably become the extent to which it is networked with other places of teaching and learning. A large school will have open administrative and academic structures that enables it to provide as well as receive educational material from other places while a small school will have an administrative and academic structure that is largely closed to the educational institutions beyond its own gates. A school, regardless of the number of students who attend it in person, that is not open in terms of being part of educational networks within which its students and teachers participate, must be considered a small and closed institution. The quality of learning centres in future will be in part be determined by the flexibility and adaptability of their educational programmes for learners at both the local and non-local level. This is often more difficult to achieve in educational institutions that have many students and teachers in daily attendance, cumbersome bureaucracies, hierarchical management and, in many cases, discipline issues generated by the concentration of

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uninterested students in closed learning environments.

Many small rural learning centres in New Zealand are more national in their orientation to education than their urban counterparts and, in this sense, are actually "big schools". The next step for these rapidly evolving institutions is to extend the regional and national learning networks that have been recently established to provide teachers and learners with access to classrooms internationally.

Learning centres that are networking with one another by using computers and other communication and information technologies as integral parts of the day to day life of both teachers and learners are, simultaneously, preparing young people for changing commercial and industrial environments. By integrating information and communication technologies in classrooms and by applying these to the development of educational networks, schools can provide students and teachers with access to industrial and commercial environments. Links with industry, commerce and, in particular, polytechnics, considerably extend the scope of learning centres. There are many implications in this for extending adult education opportunities and for rural economic development in New Zealand.

The use of communication and information technologies in any educational institution, particularly in geographically isolated learning centres, provide students with new and usually more open personal horizons. Rural students in Australia, for example, have been found to be less likely to become computer scientists or architects than their urban peers (Stevens,1993; Turney et al, 1980). This may be an outcome of being educated in small and closed learning environments. Interactive audio and video conferencing may change this pattern as young people in non-metropolitan Australia and New Zealand participate in more open learning environments.

The Pedagogy of Small Schools: The Teacher as Juggler

Teachers in small rural schools often have to advance professionally more rapidly than those in larger institutions with heads of departments to make both pedagogical and organisational decisions for them. In geographically isolated learning centres there has traditionally been a difficulty for teachers in having to make organisational, pedagogical and technological decisions in the absence of advice from the senior professional people who are available in large, urban institutions. There are many implications for the professional development of teachers in the networking of small learning centres, particularly in the development of good management practices. The close alignment of school management with classroom management has always been a feature of small school organisation. There are a range of issues to be considered in the organisation of classrooms and learning centres with the advent of inter-school networking, as well as a need for research in this area. The division between management and pedagogy in many New Zealand educational institutions can perhaps be overcome through judicious application of time, resources and careful planning, using educational networks. Management and pedagogy have always been closely inter-related in small rural schools where both have usually been the responsibility of the same person.

Today telephone lines combined with computer technology permit audio, audiographics and videoconferencing to be conducted from desktop or notebook computers. Using this sort of technology, teachers and students can be in any location as long as they can reach one another through a telephone line and a modem attached to their respective personal computers. Interactive forms of communication technology combine to provide new classroom possibilities for teachers and for learners in which location is of considerably reduced significance. There are particular implications in this for the sole teacher in small rural learning centres with perhaps a dozen learners attending in person, ranging from new entrants to senior primary school students. The possibilities of the teacher combining intensive face to face instruction for some students while others in the same room are linked to other learning centres undertaking different tasks, are becoming increasingly obvious (Renwick, 1993). The New Zealand Correspondence School has played a major role in this collaborative form of teaching in many schools.

There are also implications for urban secondary learning centres in situations in which only a few students may wish to study a subject such as the Korean language and which is not, therefore, viable in economic terms. By accessing classes from another place, in this case perhaps from the New Zealand Correspondence School or, possibly, from an Australian network, students can learn this subject that

would otherwise not be available to them. For the urban or the rural student in these circumstances, the location of their learning centres is irrelevant as long as it is reasonably close to their homes. What is important is the access that they have to computers, modems, telephones and other technologies combined with the knowledge of how to gain access to the class that they wish to join.Today, regardless of location, students can access what they want in the curriculum and thereby gain the knowledge that they feel is appropriate to their vocational and educational aspirations.

While new communication technologies can provide a variety of ways of accessing knowledge and giving geographically isolated people educational and vocational opportunities, it is acknowledged that face to face instruction remains a very important aspect of learning. It is likely however, that teachers and learners will interact in different ways in future and each may have slightly different roles. In gaining access to more personalised and individualised instruction, students in urban as well as rural networked learning centres will require the attention of teachers, in particular, guidance in crossing new national, international as well as intellectual boundaries. Students are much more likely to be able to do this in familiar environments than they are in learning centres with high daily attendances (the traditional "big school") in which teachers are often busy with administrative matters, including discipline. In rural areas where a full time teacher is no longer employed, teacher expertise may be accessed at a distance by students, assisted by a rostered parent or teacher aide. Another solution may be the appointment of itinerant teachers to assist students in a number of rural learning centres. These are issues that require urgent consideration.

With the increasing availability of information and communication technologies, it is questionable why large numbers of students need to be concentrated in a single institution. While there are obvious social and developmental reasons for young people meeting and socialising during their formative years, the educational grounds for this are becoming more difficult to justify. New information and communication technologies provide a measure of flexibility that has yet to be realised in the organisation of education on a daily or yearly basis in the lives of most students. As learning inevitably becomes more and more networked and institutions teach to and from one another, it may be more appropriate to create more small, open learning centres rather than concentrate resources into large, closed institutions that will increasingly have to devote more and more time to internal administration.

A New Vision For Small Schools: The Digital Intranet

The introduction of distance education to conventional classrooms involves a paradigm shift whereby teachers and learners have their roles and positions in relation to one another redefined. The advent of school networking will require reconsideration of the ways in which schools, as we presently know them, are organised to become learning centres within educational networks. The model of school organisation as we know it is about to be challenged by the introduction of new communication technologies. Some small rural schools in New Zealand are at present in the forefront of this change. Teachers will have to consider a range of new professional demands as they make new organisational and pedagogical decisions. Perhaps what will be most challenging for the teaching profession is the fact that their decisions, and the outcomes of them, will become much more public as they are examined within learning networks. For some teachers new communication technologies will be liberating in that they will have the excellence of their ideas exposed to the educational world and they may, in some cases, acquire enlarged classes as more and more students want to learn from them. New communication technologies may give excellent teachers the recognition and the public that they have always deserved but never attained.

The introduction of new communication technologies can make the task of learning a bigger challenge for both student and teacher as communication technologies facilitate the expansion of intellectual horizons for all. This is almost inevitably going to mean that students will have to consult teachers to an increasing extent about their learning needs, while teachers will have to work ever more closely with students to shape the increasing availability of courses from educational networks to student learning styles and vocational aspirations. Teaching and learning may become, as a result, a more co-operative matter, ie teaching-learning. As well as providing the opportunity for increased interdependence of teacher and student, the advent of networked learning centres provides opportunities for both teacher and student to work more independently of one another for part of a school day than is possible in traditional

classrooms.

It could perhaps be argued that all teaching and learning is already a form of distance education in that students and teachers use books and references that are usually produced in other places by unknown people. Distance education today enables students, both urban and rural, to access educational services from multiple sites through networks. Distance education itself is in the process of undergoing a paradigm shift from a closed to an open model as learners are able to access information from many places within the course of a single lesson. While there will always be an important place for national institutions like the Correspondence School, particularly in the provision of instructional design expertise and learning materials, increasingly, distance education will become more open as it becomes networked.

It is perhaps appropriate to consider the small rural classroom as a model for the future organisation of learning centres. Within a single small rural classroom there is likely to be multiple learning needs. Learners have different learning styles, different levels of interest in what is being taught and different ambitions in terms of the application of what is presented by teachers. Above all, learners have different levels of aptitude for particular subjects in the curriculum and, unlike other educational institutions, students can range widely in age and educational level. The teacher is charged with teaching members of such a diverse class all at the same time, requiring considerable organisational and pedagogical skill. It is not necessarily appropriate for all these learners to participate in a lesson at same the time; for some it will be too easy and for others too difficult. In such a classroom, it may be appropriate for some students to take time out to learn in their own ways for some of the time, without even leaving the classroom if they have access to a computer that is attached to a network. It is possible for this diverse grouping of students to be together in a single classroom at the same time and participate in a range of other classrooms, some of which may not necessarily be located in the student's own town, district or even country. As distance education shifts from a delivery system that is closed and centralised to one that is open and more of a multi- point access bank of information, learning can be increasingly individualised and the location of the student's home and learning centre reduces in importance. Some teachers of students in geographically isolated classrooms, currently known as rural one teacher schools, realise the potential of using networks in providing appropriate education for young people from other centres while giving others intensive personal instruction.

Concentrating students in large classes in large learning centres for all of a school day is not necessarily the most appropriate form of educational administration. Small and intimate learning centres that provide the student with professional advice and technical and intellectual assistance in learning from a range of other places is an attractive alternative. It may be appropriate to re-assess the organisational and pedagogical skills of successful teachers in small schools to provide insights into the educational future which will be based, inevitably, on networked learning centres.

Conclusion: Three Challenges for Small Schools

With the developments that are rapidly taking place in information and communication technologies and their application to teaching and learning, rural as well as distance education may now be redundant concepts (Stevens,1991). The size of a school and its location will decrease in significance as new technologies encourage the development of national and international learning networks. Through the development of networked learning centres, small schools can meet the three challenges at present facing them: the challenge to their educational viability, the challenge of providing equality of access to post secondary school educational and vocational opportunities as expected of large urban institutions, as well as the challenge to their own continued existence (3).

It is appropriate now to consider matching changes in information and communication technologies with educational planning and policy by developing networked learning centres for all New Zealanders, regardless of where they live. Unless this happens, New Zealand educationalists may soon face a new challenge in the form of increased provision of education in this country from overseas educational networks.

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